The foot, quite literally, is the basis of everything we do in fitness. Our feet give us balance and stability, and help keep our spines supported, but are universally overlooked by fitness experts and trainers alike. Here, I am going to discuss the function and form of feet in relation to exercise, and show you how important they are to getting fit.
I am literally obsessed by the feet. I can’t talk about the shoulder without mentioning the feet, I can’t get through a session without working with the feet and don’t go a night where the five toed little fiends don’t enter my dreams.

The modern personal training industry remains very much focussed on every part of the body other than the feet. The bodybuilding world is very much a ‘calf-up’ world, after all we definitely didn’t see Arnie and the gang showing off there peroneous longus back in the 70s!

The UK’s leading training providers for newly qualifying PTs still follow the same old model of isolated training, understanding muscle action and concentric exercises that were born in the 70s on Muscle Beach, Los Angeles, and strictly follow the type of programme design preached by Tudor Bompa et al.

Fine, if you are a bodybuilder. But why have these exercises grown into all sports whether the goal is muscle building or not? Quite simply because they are effective in building strength, giving the body shape, contributing to fat loss and has benefits for bone growth and long lasting skeletal durability … or so we thought.

The majority of people that train in our gyms are sold down the same old alley. If I want results I need to pump reps out over a period of sets, rest for so long and work out to the max. Women don’t lift enough and men lift too much affecting their form and long term posture whilst forming major imbalances in the body … not to mention the obsession with hypertrophy whilst the trainer forgets to remind them that too much hypertrophy will lead to muscle ischemia (lack of oxygen in the muscle)

Next comes the magic ‘f’ word – function! Functional training arrives, the use of Swiss balls, balance boards, medicine balls and cables and with a bit of luck we can improve this thing called posture. Some people get big from it, others enjoy and there remain those who can’t resist sticking with an isolated routine and feeling the pump (Who can blame them: after all Arnie suggests in the movie ‘Pumping Iron’ that the ‘pump’ is better than orgasm!)…

The fact remains though, in our fitness industry, we aren’t taking the feet into consideration – and yet if training functionally or upright, using the above tools, we are using our feet – naturally – and incorporating them in the session. The fact that we aren’t taught about the foot’s role in motion, training and exercise means that the very idea that the foot itself might have postural problems seems ludicrous, and that those two little balance boards on the end of my legs can affect my posture, my results and my performance seems not far short of the ridiculous.

WTF? Yes, the foot plays a very powerful role in your posture and your potential and very few PTs or therapists have a clue how to work with it, correct it, manipulate it and optimise it’s role in the body through basic movement patterning. Through movement, the joints and the muscles of the foot generate efficiency and power for forward locomotion as well creating flexibility and enhance mobility in my whole body and make me more efficient as a unit.

And no matter what exercises and protocol you administer to the upper body or the spine itself, if we don’t treat or move the feet, the spine will continue to respond to the foot’s inefficiencies.

So, why on earth would we choose to neglect the training of such a complex and highly important structure?

Sure exercising the feet doesn’t give me big pecs or over trained traps… but guess what: it will help me squat better, deadlift more, create flexibility and enhance mobility in my whole body and make me more efficient as a unit.

You’ve heard the saying: you can’t build a house on dodgy foundations – this is no different. Poor foot function is equal to poor posture, poor flexibility, limited performance potential and an increased risk of injury. I still have to prove myself … but imagine that were true, you’d definitely be interested wouldn’t you?

Oh and the big pecs are more likely to come from enhancing your posterior sway rather than increasing the weight on your bench press …

**INSIDE YOUR FOOT (for those who haven’t ‘seen’ it before)**

The spine has 34 vertebrae (7 x cervical, 12 x thoracic, 5 x lumbar, 5 fused sacrum and 4 coccyx) all linked in a column or line resulting in 34 joints that forge the space between the bones. That’s a lot of joints.

The foot has 26 bones (28 if you include the 2 x sesamoid bones) and 33 joints. These joints aren’t linear like the spine, instead they form a crazy paving type layout of articulation… that’s a lot of complex joints. There are two feet and one spine. Spine = 34 bones and 34 linear joints; Feet = 52 bones and 66 non-linear articulating joints. Why on earth would we choose to neglect the training of such a beautiful and complex structure?

**INSIDE YOUR FOOT (for those who haven’t ‘seen’ it before)**

WTF? Yes, indeed, the foot!

The spine has long been the focus for therapy and has crept into the posturally aware trainers mind as he approaches the functional understanding of the spine. Bad posture equals kyphosis or lordosis and we might also find a tilted pelvis – anterior/posterior/swayback.

Notice that these spinal anomalies are sagittal plane meaning they are exaggerations of flexion/extension in the vertebral or hip joints.

Advanced trainers may look for a scoliosis (a frontal plane anomaly) or a rotation (transverse plane) in the spine too.

What if I was to drop the bomb and tell you that all spinal anomalies in upright posture can be linked back to the foot, and added that the 66 joints of the feet are capable of altering the structure of the 34 joints of the spine?
your upper body to avoid falling over and putting a foot down?
Either way you are swaying! Tiny movements in the foot equate to
massive movements in the upper body or equally a response in the
muscles somewhere above the ankle (calf/glute/quads).
Just this simple exercise highlights how moving the foot does
directly exercise and mobilise other parts of the body.
Postural sway also occurs when we are standing bilaterally too, i.e.
with both feet on the floor. This means that even when you think you
are standing still, you are swaying and that has important ramifications
for our body, our spinal posture, the way we move and the role that
muscles have in the body. Unfortunately it isn’t as simple as the
anatomy book suggests.
Tiny movements in both feet, lead to the movements in the upper
regions of the body, like a building in an earthquake zone: movement
from the ground will shake the whole structure.
Try it: pronate or flatten the
left foot and return to your
natural position, now pronate
or flatten the right foot and
return to your natural position,
repeat several times and
quicken the process until you
have a natural rhythm going ... let everything go, you’ll notice
that you are swaying.
Now, picture the joints in
your spine. They will be either rotating or laterally flexing, but either
way as a result of the movement in your feet; your spine is being
affected. Now let’s assume that you have a client with one pronated
(Flat) foot and one supinated (high arched) foot: in a standing posture,
it is feasible to agree that the spinal posture will not be neutral or
ideal: it may be rotated or laterally flexed (as in a scoliosis).
How many trainers are out there assessing the foot’s impact on
this type of postural problem? Very few I would imagine. And the
amount of trainers getting results where a scoliosis is concerned? I
would suggest it’s also very few. And the amount of trainers getting
results where a scoliosis is concerned? I would suggest it’s also very
few... How about the number of trainers who continue to prescribe
heavy squats, deadlifts, or other weight bearing exercise without
consideration of either the spine or foot? You might be one of them...
it’s time to change. And it’s a simple to change to make. Working with
the feet is easy.

A THREE LEGGED TABLE
Imagine the foot as a three legged table. The table legs stand at the
big toe, the little toe and the heel whilst the missing (fourth) leg would
be medial to (inside) the heel.
The foot pronates when the weight is too great over the missing
fourth leg and the mass falls into the space causing the arch to collapse.
It is this movement that generates the sway of the rest of the body.
Fortunately, the body has a system in
place to control that movement and
act as the fourth leg to stabilise and
bring balance to the foot. That system
is called the ‘muscles’ of the foot and
to a certain extent the muscles of the
whole body and if we are to go one
step further and delve into the world
of fascia, then we can begin to look
beyond muscles as the source of our
stability – not my intention in this
piece, but what does that mean for our modern training methods?
The muscles act as a collective group to decelerate the movement
of the bones of the foot and return the foot back to it’s more natural
or comfortable position – some of you may know this as neutral.
Notice that no muscle acts to pronate the foot in this case, it is
a result of body weight or mass moving over the missing table leg
under the effect of gravity that causes the foot to fall into the space
and demands a response from all of the muscles to stop the ankle
from hitting the ground.

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of the foot generate
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forward locomotion
Hold on: am I saying that all the muscles of the foot will act to supinate the foot out of pronation? Yes I am. Even with both feet on the ground (six legs) there is not enough stability as both feet have the capacity to fall inside here too – take a look at some flatter feet. They are walking all round your gym so not too hard to find.

**SIMPLE MOTION**
The heel operates predominantly in the frontal plane. It’s anatomical shape forcing it to roll medially when unsupported on the ground. This movement is known as eversion.

Living in a three dimensional world, we can also take into account the calcaneous’ role in the other two planes of motion as well: as it everts, it will also rock forward like a rocking horse whilst having the propensity to swing out the back end in the transverse plane. It moves in all three planes, when weight is added and also in gait. It initiates the beginnings of rear foot pronation at this point causing bodily muscles to switch on (glutes, abs, lower traps – all those muscles we know benefit from good posture!)

**INTERCONNECTIONS**
Like a good bus service the bones and joints seamlessly connect round the whole body. The motion of the calcaneous knocks onto the talus and cuboid bones creating motion in them too.

The talus drops forward like the rider of the horse, whilst rotating to face it’s opposite foot in the transverse plane and follows the eversion motion as well. It basically does as it’s told by the calcaneous.

Very simply the tibia and fibula bones sit atop the talus and must also respond to the movement of the calcaneous: they internally rotate and move forward in space over the foot creating a dorsiflexion of the ankle. What sits atop the tib and fib? The knee.

Our calcaneal motion has led to movement in the knee. The knee flexes and our height drops as we we stand bent at the ankle and the knee. Naturally – try it with one foot a stride forward – do you have to flex the hip too? A sudden change in pelvic alignment thanks to movement at the hip must equally impact on the spine as well. Calcaneous à ankle à knee à hip à pelvis à spine ... Wow!

Now let’s assume that one ankle flexes less than the other OR that one ankle has less range available to it in dorsiflexion than the other.

What would happen in the spine if we had more ankle flexion, knee flexion and hip flexion on one side than the other? Try it ... a rotated pelvis and therefore a rotated spine? Try squatting on that platform.

How many of you have a client with a rotation in the spine and you are trying to rebalance it with some opposite cable pulls to pull the torso back round. Hasn’t worked has it? If not... it’s because the influence of the foot is way stronger than the influence of the cable machine and even your coaching! Sorry to be blunt.

When it comes to postural awareness, its fine to notice spinal posture, analyse the keyholes, pick apart the shoulder girdle and marvel at the pelvis – yet a little knowledge about the foot can go a long way to helping you understand why the client’s posture is the way it is and will give you clues as to what the body needs to correct poor pelvic and spinal alignment. And more importantly give you access to have far greater impact on the results of your clients and your success as a trainer.

If you are a trainer who’s come through the qualification of the UKs training providers, your knowledge of assessing, analysing and working with the foot will be minimal. Visit www.anatomyinmotion.co.uk to find out more about courses on human anatomy in motion and get to grips with the magic and influence of the human foot on the rest of your body.

Best foot forward, eh?

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